

REMARKS/ARGUMENTS

35 USC § 112, second paragraph

Claims 1 and 14 were rejected under 35 USC § 112, second paragraph for failing to be definite in light of recitation of two ranges. The applicant agrees in some respect and disagrees in others. Nevertheless, claims 1 and 14 were amended to recite a single numerical limit.

35 USC § 103

Claims 1-10 and 12-20 were previously rejected under 35 USC § 103 as being obvious over Ballard in view of Madsen. The applicant disagrees, especially in view of the amendments made herein.

As amended, claims 1 and 14 expressly require that "...the *divider extends across the upper end of the slot* such that an *upper end of the divider is located above the upper end of the slot* and such that a *lower end of the divider is located below the upper end of the slot...*" and that "...the slot is configured to have a length such that the *upper end of the slot is above a liquid fluid* disposed on a distribution plate..."

These elements are neither taught nor suggested in either Ballard or Madsen. Even if one would take Ballard's cap and would add a structure as taught by Madsen, one would not arrive at the presently claimed subject matter. Furthermore, Ballard expressly teaches that *element 318*, which is according to the examiner a divider, *is a centering lug*. The specific function of the lug in centering the cap on the riser is discussed in column 10, lines et seq. Most notably, *Ballard expressly refers to such lugs as small*. Certainly, small is not an accurate teaching or suggestion of a structure as presently claimed, which is at least 70% of a distance measured between the top of the riser and the bottom of the cap.

Similarly, Madsen's structure 15 is also a centering lug as can be taken from column 1, line 28. Remarkably, Madsen expressly teaches that such lugs can be even omitted, but certainly not made longer as discussed only a few lines below (see column 1, lines 34 et seq.). Therefore, both references fail to provide any motivation to have dividers, let alone dividers with the specified length as presently claimed.

With respect to the exact positioning of the dividers relative to the upper edge of the slot, it should be noted that Madsen's lugs are positioned entirely above the upper edge of the slots whereas Ballard's lugs are positioned entirely below the upper edge of the slots. Such positioning is consistent with a lug as a centering aid. In contrast, the divider according to the present claims will only properly function for their intended purpose when (a) the upper end of the divider is positioned above the upper end of the slot, when (b) the lower end of the divider is positioned below the upper end of the slot, and (c) when the slot height is such that the liquid fluid around the cap is below the upper end of the slot.

Only dividers having such configurations will provide sufficient compartmentalization within the annular space between the riser and the cap. As one substantial and unexpected consequence, and mostly due to the reduced ability of vapor and liquid to disengage in a lateral manner, hydraulic resistance will increase as fluid load around the cap increases. Thus, only bubble caps with presently claimed divider/slot configurations will deliver substantially same quantities of liquid regardless of actual liquid load surrounding the bubble cap. Most significantly, only such claimed configuration will reduce, and more typically even entirely eliminate liquid maldistribution across a horizontal cross section of a column (e.g., due to non-level installation of a distribution plate).

Neither Madsen nor Ballard provided any insight that would motivate such modification. On the contrary, Ballard requires small lugs, and Madsen even suggests elimination of the lugs altogether. Therefore, with respect to the reasoning of a person of ordinary skill in the art, it is the applicant's (and Ballard's and Madson's) position that stability is already sufficiently achieved with the lugs as presented in the cited references and a person of ordinary skill in the art would not be concerned with an improvement in stability. Quite on the contrary, and based on the teachings in the cited references, the person of ordinary skill in the art would be motivated to reduce or eliminate the lugs.

Claim 11 was further rejected as being obvious over Ballard and Madsen in further view of Jacobs. Since the applicant believes that the combination of Ballard and Madsen is improper in view of the amendments and arguments provided above, it is the applicant's position that the rejection of claim 11 should also be withdrawn.

The applicant believes that the present claim amendments are sufficient to overcome the Examiner's concerns and believes that the claims as amended are now in condition for allowance. *Should the Examiner consider to further reject the presently presented claims, the applicant would appreciate a telephone interview to resolve remaining issues.* The applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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